

Ecosystem Study

Semester Final Project

Final Written Report

After completing the fieldwork of your ecosystem study, the best elements of your work can now be compiled in a **scientific paper**. Different from literary papers, scientific papers have sections with standard headings (abstract, introduction, procedure, results, discussion, works cited). Aim for 3-4 pages of double-spaced written text, then add graphs and figures to finish your report.

Title

This should be a brief descriptive single line telling the reader what your project was about. Don't just title your paper "Ecosystem Study Project." The title should give the reader an idea of what you did. *e.g.* – "Biodiversity changes at Makiki Stream." You can be creative, but it still needs to be descriptive.

Abstract

The abstract is a short, 1 paragraph summary of your entire paper. As such, it should be written last (it's hard to summarize a paper before you write it!). In the abstract, you will describe where your study took place, what your research question was, the results of your experiment, and any conclusions you made. The purpose of abstracts is to allow scientists to get the general idea of dozens of papers in one sitting.

Introduction

The introduction should set the scene for your paper. It should provide some general background about your project as well as discuss why it's important that this study was carried out. In it, you should give a general description of your location, where it is, and what kind of ecosystem it is. You should also describe why you chose this location and why it's a good site for your project. In addition, make sure you describe the goals of your project. This makes a nice transition to your methods section where you describe what you did.

Procedure

In this section, you will describe in detail how you collected your data. Don't include the data just yet – that's for the next section. Include things like:

- Where did you conduct the study?
- When did you conduct it?
- How many visits did you make?
- What kind of data did you collect on your visits?
- Did you work with anyone else? What did they do?
- What kind of experiment did you conduct?
- How did you conduct it?

This section should provide enough detail so that someone seeking to repeat your experiment could do so. You don't need an equipment list. It should be written in the past tense and simply be a recap of what you did, not a recipe or instructions for how to go out and do it.

Results

This is just the presentation of your data, not what they mean. Much of your data will be in tables or graphs, but you need to do more than include those. Write up your results in paragraph form and then refer to any tables, graphs, or diagrams for further detail or explanation that would be too cumbersome to fit into paragraph form. For example, “Oxygen levels were highest in the pond where there was the most Elodea (see figure 1).” In figure 1 then, you would have the data corresponding to your statement presented clearly. Some of things that you should include in this section for your paper include:

- Assigned observations – what kind of observations did you make about your study site? What kind of changes did you observe over the course of your visits? What kind of inferences did you make?
- Group member observations – what did you group partners (if you had partners) observe about other aspects of your ecosystem that you weren’t focused on?
- What were the results of your experiment?

Discussion

This is where you discuss your results, what they mean, and why they came out the way they did. This will involve more than just your data, and will involve making inferences about what might have caused your data to look the way that it did. Essentially, you should attempt to *explain* your results in this section. To aid in this process, you should also conduct a little bit of outside research (on the internet or in the library) and see what you can find out about similar ecosystems and how they compare to yours. You can use whatever information you are able to find to help in discussing and explaining your results. You should also discuss possible sources of error in your results and suggest future research questions that could or should be carried out.

Works Cited

To avoid plagiarism, please describe from where you got your knowledge. After writing each piece of information you got from a website, book or magazine, place an *endnote* (in parentheses) with the title and date of the publication. Please see examples below.

Example paragraph (the endnote is in **bold**):

I want to be a botanist. Plants are the only organisms that can trap the sun's energy, and this unique way of making a living impresses me. There are many plants unique to Hawaii (**UH Botany Website 2004**), making this an important field of science to study in this state.

At the end of your document, include a **works cited** page with each source you used. The general formats for citing different sources are below (the items in bold should be included in all citations). *What if you can't find some of the information required in your bibliography?* Please refer to the citation of the Punahou School Website below.

Website

Author, A. (Date Created). Title of webpage. **In** *Title of website*. **Retrieved** Date Retrieved, **from** URL.

Example:

1. Sleeplessdigital.com. (2004). Welcome to the University of Hawaii Botany. In *UH Botany Website*. Retrieved 12/4/06, from http://www.botany.hawaii.edu/gradstudentpages/Michael_Bassford.htm.
2. No author. (No Publication Date). Punahou. In *Punahou School Website*. Retrieved 12/4/06, from <http://www.punahou.edu>.

Magazine or Journal Article

Author, A. (Date Published). Title of article. *Title of Magazine or Journal*, volume(issue), pages.

Example:

1. Eldridge, Mark D. B. and Browning, Teena L. (2002). Molecular genetic analysis of the naturalized population of the brush-tailed rock-wallaby, *Petrogale penicillata* (Marsupialia: Macropodidae). *Journal of Mammalogy*, 83(2), 437-444.

Book

Author, A. (Date Published). *Title of book*. Publication location: Publisher.

Example:

1. Miller, Kenneth R. and Levine, Joseph. (2004). *Biology*. Upper Saddle River, NJ: Prentice Hall.

General Info

Some other bits of info for your paper:

- Your paper should be written in complete sentences using proper grammar
- It is strongly suggested that your paper is type written, but if that is an especially big hardship, you can handwrite (*it had better be neat though*).
- Don't get obsessed about length. The length should be as long as it needs to be to include everything above.
- Don't play games with font sizes or margins to try to make your paper look longer. If you're worried about it not being long enough, then focus on content, not appearance.
- Give each section of your paper its own heading. (You don't have to put a heading for the title, just put the title at the top.)
- All of your tables and figures should be properly labeled with titles, axes, etc.

Written Report Assessment

Component	Points Worth	Points Earned
Abstract Briefly summarizes all parts of your paper	5	
Introduction General description of your site, goals of your project	15	
Procedure Detailed description of what you did in your study	15	
Results Detailed description of your results. Assigned observations, other observations from your group, experiment results. Should include data tables and/or graphs and figures	15	
Discussion Explanation of why your results came out the way they did. Outside sources used, and possible sources of error or improvements discussed.	15	
Works Cited Properly formatted bibliographic information of works you reference in your paper	5	
General Paper is written clearly, good grammar is used, and it is formatted properly	10	
Total	80	